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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,633	10/20/2003	Ching-Pin Wang	WANG3201/EM	1811

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EXAMINER

LUI, DONNA V

ART UNIT	PAPER NUMBER
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2629

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/687,633	Applicant(s) WANG ET AL.	
	Examiner Donna V. Lui	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Inventorship

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Specification

3. The disclosure is objected to because of the following informalities: Figures 4 and 5 have an element labeled 123 not defined in the specification. Element 6 is described in the specification but is not shown in the drawings.

Appropriate correction is required.

Claim Objections

4. **Claim 6** is objected to because of the following informalities: In view of the specification and for clarification purposes Claim 6 should read as follows:
- page 9, line 8 -- comprising a second lens part disposed in the cavity, to focus and project reflecting --
- page 9, line 9 -- light that is projected from the operating surface. --
- Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 1 and 6-7** are rejected under 35 U.S.C. 102(e) as being anticipated by Bohn (Patent No.: US 7,009,598 B1).

With respect to **Claim 1**, Bohn discloses a light guiding device of an optical mouse (*See figures 2, 6, and 7; column 3, lines 30-32; column 4, line 49; light guiding device is comprised of all elements contained in figure 7*), implemented inside the optical mouse applied to an operating surface (*column 6, line 19: target area ~ operating surface*), the optical mouse having a light

Art Unit: 2629

device to project an incident light (*column 4, lines 6-7: LED ~ light device*), the light guiding device comprising: a bottom (*See figure 7, element 18; column 3, line 41*), to define a cavity (*See figure 7, the cavity is equivalent to the space surrounding elements 110, 112, 28, and 114b*); and a first lens part disposed facing the light device, to receive the incident light projected by the light device and focus the incident light to project (*See figure 7, element 120; column 4, lines 56-59*); a prism plane disposed obliquely towards the first lens part to totally reflect the incident light focused by the first lens part (*column 5, lines 5-6 and lines 11-12; figure 8, element 120: collection lens ~ first lens, element 110: channel ~ prism plane, the side facing element 112*); and a slope plane arranged obliquely substantially towards the same direction as the prism plane, to slightly and downwardly refract the incident light after a total reflection in order to guide the incident light totally reflected by the prism plane into the cavity (*column 6, lines 15-19; figure 7, element 28: Baffle ~ slope plane*).

With respect to **Claim 6**, Bohn teaches a second lens part disposed in the cavity (*See figure 7, element 114b: imaging lens ~ second lens*), to focus and project reflecting light that is projected from the operating surface (*column 4, lines 60-62*).

With respect to **Claim 7**, Bohn teaches the light device is a light emitting diode (LED) die (*column 4, lines 6-7*).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 2-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohn.

With respect to **Claim 2**, Bohn does not mention that the incident light after being focused by the first lens part has an included angle of 45 degrees relative to the prism plane.

Bohn teaches a first prism plane (*figure 7, element 110*) makes an angle of 52.5 degrees from the left horizontal (*See figure 6 and Table 1, a2 ~ 52.5 degrees*) and a second prism plane makes an angle of 47.5 degrees from the left horizontal (*See figure 6 and Table 1, b2 ~ 47.5 degrees*). Bohn teaches most of the light projected from the light device is directed through channels 110 and 112 of figure 8 and simultaneously illuminates the operating surface (*column 6, lines 31-33 and lines 40-41; operating surface ~ target area*). In order for the incident light to achieve a 45 degree angle relative to the prism plane after being focused by the first lens part it can be seen from figure 8 that when the channel 110 is shifted closer to channel 112 by the corresponding amount of angle change, equivalent results of focusing incident light to the operating surface (*the operating surface is represented by T in figure 8*) are achieved.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to have incident light after being focused by the first lens part having an included angle of 45 degrees relative to the prism plane by shifting the first prism plane of Bohn

Art Unit: 2629

to the left by an amount corresponding to the decline of the prism plane to achieve an angle of 45 degrees so light is more evenly distributed across the operating surface and non-uniform illumination is reduced (*column 6, lines 41-44*).

With respect to **Claim 3**, Bohn does not explicitly state that the incident light after the total reflection is parallel with the operating surface.

Note the above discussion regarding the modified teachings of Bohn such that the angle of the prism plane is at 45 degrees and shifted accordingly to the left. Noting that the prism plane forms a total internal reflecting surface, the incident light projecting from the prism plane is parallel with the operating surface.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the incident light after the total reflection is parallel with the operating surface, as taught from the modified teachings of Bohn, so light is more evenly distributed across the operating surface and non-uniform illumination is reduced (*column 6, lines 41-44*).

With respect to **Claim 4**, Bohn does not explicitly state that the incident light projected by the light device has an included angle of 90 degrees relative to the operating surface.

Bohn teaches a light device placed directly above the first lens (*See figure 7, element 210: LED = light device, element 120: collection lens ~ first lens*), resulting in a direct projection of incident light to the first lens, which meets the limitation of having an included angle of 90 degrees relative to the operating surface.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have incident light projected by the light device having an included angle of 90 degrees relative to the operating surface, as taught by Bohn, so as to direct light to the operating surface via the prism plane (*column 4, lines 56-59*).

9. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bohn as applied to claim 1 above, and further in view of Chin (Pub. No.: US 20003/0201951 A1).

With respect to **Claim 5**, Bohn teaches a bottom (See figure 7, element 18) that has a cavity so that incident light is projected on the operating surface.

Bohn does not explicitly state that the optical mouse has a bottom opening facing directly to a cavity opening formed in the cavity's bottom such that the bottom opening faces directly to the cavity opening formed in the cavity's bottom when the light guiding device is implemented in the optical mouse, so that the incident light in the cavity is projected on the operating surface through the bottom opening and the cavity opening.

Chin teaches an optical mouse ([0001]) has a bottom opening facing directly to a cavity opening formed in the cavity's bottom such that the bottom opening faces directly to the cavity opening formed in the cavity's bottom (*See figure 1, element 221: bore ~ bottom opening*), so that the incident light in the cavity is projected on the operating surface through the bottom opening and the cavity opening ([0019], lines 9-12).

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to have a bottom opening facing directly to a cavity opening formed in the

Art Unit: 2629

cavity's bottom, as taught by Chin, to the light guiding device of an optical mouse of Bohn so as to realize excellent mobility of the mouse (*Chin: [0008], last line*).

Response to Arguments

10. Applicant's arguments filed July 18, 2006 have been fully considered but they are not persuasive.

Applicant argues that having the limitation, “a slope plane arranged obliquely substantially towards the same direction as the prism plane” is neither disclosed nor taught by the cited reference.

The examiner respectfully disagrees. Bohn teaches a slope plane (*See figure 7, element 28*) arranged obliquely substantially towards the same direction as the prism plane (*element 110, the side facing element 112*).

Applicant argues that the shape of the channels of Bohn is different from that of the channel of the instant application and that there are two channels formed on the “light guiding device” of Bohn, while there is only one channel formed on the light guiding device of the instant application.

The examiner agrees, but the claims do not recite the limitation of the channel comprised of a specific shape nor do the claim limitations recite the existence of only one channel.

Applicant argues that the baffle is not made of transparent substance and that the baffle is not used to refract the incident light, thus the baffle of Bohn is not equivalent to the slope plane of the instant application.

Art Unit: 2629

The examiner disagrees that the baffle of Bohn is not equivalent to the slope plane of the instant application. Please see figure 7, element 28 where Bohn teaches a slope plane arranged obliquely substantially towards the same direction as the prism plane such that the face of channel 110 closest to element 28 refracts the incident light after a total reflection by the face of channel 110 closest to element 112, where such an arrangement guides the incident light totally reflected by the prism plane into the cavity. The examiner is not precluded from citing the face of element 110 closest to element 28 in figure 7 in order to meet the limitations.

Applicant argues that Bohn does not teach an exact 45-degree prism plane. The examiner respectfully disagrees, and would like to cite that Bohn teaches a first prism plane that makes an angle of 52.5 with the horizontal and a second prism plane that makes an angle of 47.5 from the horizontal, both of which direct light into the cavity (See figure 6, column 6, lines 51-56). Bohn teaches that light directed from the first prism plane to the cavity is at a greater angle from the vertical since it is closer to the cavity and that light directed from the second prism plane to the cavity is at a smaller angle from the vertical since it is farther from the cavity. In order to direct light to the cavity from a distance farther than both the first and second prism plane, a smaller angle of the prism plane is required which is inclusive of 45 degrees. Thus, Bohn teaches a prism plane of 45 degrees.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donna V. Lui whose telephone number is (571) 272-4920. The examiner can normally be reached on Monday through Friday 8:30 a.m. - 5:00 p.m..

Art Unit: 2629

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571)272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donna V Lui
Examiner
Art Unit 2629

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read "Amr A. Awad", with a long, sweeping horizontal stroke extending to the right.